PHYS 102 Electricity and Magnetism
Spring 2020

Instructors

Dr. F. Barry Dunning, Brockman Hall 320, ext. 3544, fbd@rice.edu
Office Hours: Tues. 2:00 – 4:00

Dr. Lam Yu, Brockman Hall 240, ext. 2894, lhyu@rice.edu
Office Hours: Mon 11:50 – 1:50 and 5:20 – 6:20; Wed. 11:50 – 12:50, Fri. 11:10 - 12:10

Dr. Michael Cone, Brockman Hall 228, ext. 2578, michael.t.cone@rice.edu
Office Hours: Mon 1:30 – 3:30, Tues 2:30 – 4:30, Wed 2:30 – 3:30, Fri. 11:15 – 12:15

Dr. Robert Beaird, Brockman Hall 239, ext. 2791, rpb5@rice.edu
Office Hours: Mon 3:00 – 5:00, Tues 1:00 – 3:00, Fri. 3:00 – 5:00

Learning Objectives

This course serves as an introduction to electricity and magnetism. You will learn about the nature of charge in matter and about the physical interactions between charges as described by Maxwell's Equations. Applications to basic circuit elements in both DC and AC circuits will also be addressed.

Announcements

Announcements are made on the Physics 102 Canvas page under the "Announcements" tab. Registering for PHYS102 automatically registers you for the PHYS102 site on Canvas.

Weekly Class Meetings

Plenary course meetings (PHYS102) will be held Monday and Wednesday at 9:00 am and 10:00 am in Herzstein Amphitheater. In these sections concepts will be explained and illustrated through lectures and demonstrations. While you must be enrolled in either PHYS102 Section 001 at 9:00 am or PHYS102 Section 002 at 10:00 am, you may attend either lecture.

Small group discussions (PHYS104) will be held either Thursday or Friday according to your assigned section. In these sections the concepts will be discussed in more detail, and problem solving strategies will be illustrated. To get credit for PHYS102, you must register for PHYS104 and choose a section that fits your schedule. ***To reiterate, you must be signed up for both PHYS102 and PHYS104, and you must attend your assigned section of PHYS104.***

Laboratory

The laboratory is an integral part of the course. You must complete an online form to request a lab meeting time before 5 pm, Friday, January 17th, 2020, in order for us to take into account your scheduling preferences. The online lab preference form can be found in the "Lab Preference Form" link under the PHYS 102 S20 tab in Canvas. You do not have to register separately with the university registrar for the lab. Performing the laboratory experiments is very important and missing a laboratory is

a prescription for loss of credit. Laboratory policies are presented in more detail in the laboratory manual available on Canvas. *All questions related to the laboratories should be directed to Dr. Yu.*

Textbook/Webassign

We are using the textbook **Physics for Scientists and Engineers**, 10th Edition, by Serway and Jewett (ISBN-13: 978-1337553278). Along with the textbook, you will need a WebAssign subscription in order to access and complete the homework for the course.

Note: Students who took Phys 101 in the Fall 2019 and purchased the Cengage Unlimited single term access should be able to register for the Phys 102 WebAssign page without any additional purchase. Please let us know if there are any issues with this.

To simplify the process of getting the textbook and WebAssign access we recommend purchasing a 1-term (4 months) Cengage Unlimited subscription at https://www.cengage.com/unlimited/ . This will get you full access to the WebAssign homework materials for the course, as well as access to an electronic version of the textbook. However, each student should select the option that best suits their needs. We will discuss the various purchase options on the first day of class, so feel free to wait until then to make your purchase. Students should also note that a single active Cengage Unlimited account should cover other Cengage-based materials (WebAssign, MindTap, etc.) required for additional courses taken concurrently with Physics 102. For a small additional cost you can also rent a physical copy of the textbook for one semester.

To access the WebAssign course material for the first time, go to www.webassing.net, click on **Enter Class Key** at the top, and enter: **rice 4996 1492**. When you create the account, please make sure you ***register with your name as it appears on your Rice ID***. Also, please enter your Student ID number. This registration process will give you free access until Jan. 27th (14 days from start of the course).

If you opt to obtain a hard copy of the text, you may wish to purchase/borrow an older edition of the book, *e.g.*, the hardbound 9th edition (ISBN-13: 978-1133947271) or the loose-leaf 9th edition (ISBN-13: 978-1305080362). (We used the loose-leaf hybrid edition for the past few years... so you likely know someone who has a copy for borrowing/purchase.) Note that the chapter layout of the 9th edition differs somewhat from the 10th edition.

WebAssign Registration

When registering with WebAssign use the Class Key: **rice 4996 1492**. Please fill in your Student ID when registering with WebAssign. This will help ensure you get proper credit for your work.

OpenStax

You are encouraged to use the free *University Physics* textbook available through OpenStax as a supplemental text for the course. The book is available in both e-text and PDF formats. You should check on updates from time to time.

e-text: https://openstax.org/details/books/university-physics-volume-2

You can also download the pdf using the same link.

Calculators and Symbolic Programs

You should have a hand-held calculator for use in doing calculations in homeworks, pledged problems, quizzes, and exams. It does not need to be programmable, but it should compute trigonometric and exponential functions. You may not use symbolic manipulation programs, calculators or websites to complete your homework, quizzes, pledge problems, or exams.

WebAssign Homework

You will be assigned weekly homework problems in the WebAssign online homework system. These will provide experience in problem solving and in using the concepts discussed in the course. They are selected to help you prepare for the pledged problems, and exams. You are encouraged to discuss these suggested problems with fellow students, tutorial leaders, and instructors. You may attempt to answer each question up to 5 times in WebAssign for full credit. Note that students will get individualized versions of the problems (i.e. the numbers in your version of the problem may be different to your classmates) so you will need to work out the final answers for yourself.

Pledged Problems

Pledged homework problems will be distributed weekly online via WebAssign. These are intended to give you some experience in working, completely on your own, problems that are typical of those that will appear on exams. ***You may consult your own notes, problem solutions we have posted, your own textbook (including the eBook version), and a calculator, but you may not work with other students.*** The pledge problems will consist of multiple choice and numerical or symbolic response questions. They are to be taken in a single sitting and with a 2.5 hour time limit.

Small Group Participation

Your grade for the 104 section will be based on attendance and participation. The grade for each PHYS 104 section will be normalized across all sections of PHYS 104 to account for the grading patterns of any particular instructor.

Tests and Final Examination

90-minute tests will be given at *7:00 PM on February 19th* and *7:00 PM on April 1st* (both tentative). There will also be a three-hour COMPREHENSIVE FINAL EXAMINATION that will be scheduled by the registrar. Non-programmed hand calculators may be used on tests and the final examination but no books or notes will be allowed. You may not use cell phones or tablets as calculators. Grades on the free response section of tests are based on what you actually write down. Ordinarily, the answer to a problem by itself, even if correct, is not sufficient to obtain full credit; you must also show that your method of solution is correct. Proper physical reasoning, when clearly demonstrated, will earn significant amounts of partial credit, even in the face of grievous mathematical errors. The grader should be able to determine, without guessing, the steps used to solve the problem.

Regrading Policy

Do not write in a graded exam book or homework problem after it has been returned to you. If, after consulting the solutions we have prepared, you feel that your work was not correctly graded, please direct our attention to the specific issues by means of a note on a separate sheet stapled to your paper. *Submit it to your instructor within one week of the date the solutions are posted on Canvas.* We will

review the grading of the portion in question, and re-determine the grade that the paper deserves. We may also review the rest of the paper to ensure that your grade is consistent with the instructions given to the graders.

Make-ups and Excused Days

Make-ups for missed quizzes, pledged problems, tests, laboratories, or 104 participation will be given at the discretion of the instructor. You can be excused without penalty or be allowed a delayed make-up of quizzes, pledged problems or tests if one of the following two conditions is met:

1. You are on official university business or you have a conflicting class, and you notify us well beforehand. If you have a conflicting class, a signed note from the instructor of that course is required stating that you actually attended class on the day of the test.

2. You have a serious reason beyond your control, such as your own illness or a death in your family, and you get word to us immediately. As soon as possible, notify your instructor in writing or by e-mail. (The policy on laboratory make-ups is stated in the lab manual available on Canvas).

Grades

Your final PHYS 102 grade will be determined from an average that will be weighted as follows:

Two Tests ---------- 15% each

Final Exam ---------- 20%

Pledged Problems ---------- 15% (one lowest score will be dropped)

WebAssign Homework----- 10%

Laboratory ---------- 15%

PHYS104 Participation------- 10%

Additionally, you must receive a final laboratory grade of 50% or above in order to pass PHYS 102.

You should retain all your tests, pledged problems, suggested problems, and the final exam so that you can confirm the accuracy of our records, which we will update regularly on Canvas. Students who receive a weighted average of 90% or greater will receive a grade of at least A-, while those obtaining a weighted average of 75% or greater will receive a grade of at least a B-, and those students who obtain averages of 60% or greater will receive a grade of at least C-. We may lower these cut-offs at the end of the semester, but we will not raise them. In PHYS 104 you will receive a grade of Satisfactory or Unsatisfactory.

The Honor System

We believe very strongly in the Rice Honor System: it applies to all work submitted for a grade in the course (except for suggested problems), and we perform our due diligence as instructors in upholding it. The Honor Pledge should be written in full and signed on the pledged problems, tests, the final examination, and any other work that has been announced as pledged. Note:

1. Students will be seated in tests and exams in alternate rows, alternate seats, or as otherwise directed by the person administering the test or examination.

2. Test or examination papers will not be taken from the examination room without the permission of the person administering the test or examination. If you have a special problem with taking a test in the place to which you have been assigned, please let us know.

Numerous resources for solving physics problems are available via the Internet. These sites can be perfectly legitimate tools when seeking additional examples to learn difficult concepts, but none of them are permitted for use on pledged assignments, such as quizzes, pledged problems, and tests. We are aware of many of these sites and maintain user profiles on them that allow us to check for PHYS 102 course content appearing thereon.

Students with Disabilities

Any student with a documented disability seeking academic adjustments or accommodations is requested to speak with the instructors during the first two weeks of class. All such discussions will remain as confidential as possible. Students with disabilities are encouraged to also contact Disability Support Services in the Allen Center (e-mail: adarice@rice.edu, phone: 713-348-5841) during the first two weeks of class so that timely and appropriate arrangements may be made.